

**CLAIMS**

What is claimed is:

1. A method of molding a circuit package comprising the acts of:

5 (a) disposing the circuit package on a cavity plate, the circuit package comprising a semiconductor device coupled to a substrate;

(b) disposing the cavity plate on a first support plate;

(c) disposing a second support plate on the cavity plate;

(d) injecting a molding compound into the cavity plate;

10 (e) separating the second support plate from the cavity plate;

(f) separating the cavity plate from the first support plate; and

(g) separating the circuit package from the cavity plate.

2. The method of molding a circuit package, as set forth in claim 27, wherein

15 act (a) comprises the act of disposing the circuit package on the cavity plate die-side down.

3.. The method of molding a circuit package, as set forth in claim 27, wherein

act (b) comprises the act of disposing the cavity plate on the first support plate by

20 mechanically moving the cavity plate onto the first support plate.

4.. The method of molding a circuit package, as set forth in claim 27, wherein

the cavity plate is configured to accept a protruding portion of the circuit package.

25

5. The method of molding a circuit package, as set forth in claim 30, wherein act (b) comprises the act of disposing the protruding portion of the circuit package upon the first support plate as the cavity plate is disposed upon the first support plate.

5

6. The method of molding a circuit package, as set forth in claim 27, wherein act (c) comprises the act of disposing the second support plate on the cavity plate by mechanically moving the second support plate onto the cavity plate.

10 7. The method of molding a circuit package, as set forth in claim 27, wherein act (d) comprises the act of injecting a molding compound into an aperture to create a peripheral ring around the semiconductor device.

15 8. The method of molding a circuit package, as set forth in claim 33, wherein the molding compound is an insulating material.

20 9. The method of molding a circuit package, as set forth in claim 33, wherein the molding compound is injected in liquid form.

10. The method of molding a circuit package, as set forth in claim 35, wherein the molding compound is allowed to harden after the injection process.

25

11. The method of molding a circuit package, as set forth in claim 27, wherein act (f) comprises the act of elevating the cavity support plate with respect to the first support plate by a plurality of cavity plate push rods, the cavity plate push rods controlled to extend from the first support plate.

5

12. The method of molding a circuit package, as set forth in claim 27, wherein act (g) comprises the act of elevating the circuit package with respect to the cavity support plate by a plurality of rail ejection pins, the rail ejection pins controlled to extend from the first support plate.

10

13. The method of molding a circuit package, as set forth in claim 27, wherein a film is disposed between the cavity plate and the first support plate.

15

14. The method of molding a circuit package, as set forth in claim 39, wherein the film is comprised of a resilient material.

20

15. The method of molding a circuit package, as set forth in claim 27, wherein a film is disposed between the semiconductor device and the first support plate.

25

16. The method of molding a circuit package, as set forth in claim 41, wherein the film is comprised of a resilient material.

17. The method of molding a circuit package, as set forth in claim 27, wherein the acts are performed on a plurality of circuit packages at once.

5

18. The method of molding a circuit package, as set forth in claim 43, further comprising the act of singulating the plurality of circuit packages.

10

19. The method of molding a circuit package, as set forth in claim 27, wherein the acts are performed in the recited order.

15

20. A circuit package comprising:

a substrate;

a semiconductor chip having a top surface, a bottom surface, and a periphery, the bottom surface being coupled to the substrate;

a peripheral ring of molding compound deposited on the substrate and about the periphery of the semiconductor chip, leaving the top surface of the semiconductor chip uncovered by:

20

(a) disposing the circuit package on a cavity plate, the circuit package comprising a semiconductor device coupled to a substrate;

(b) disposing the cavity plate on a first support plate;

25

(c) disposing a second support plate on the cavity plate;

(d) injecting a molding compound into the cavity plate;

- (e) separating the second support plate from the cavity plate;
- (f) separating the cavity plate from the first support plate; and
- (g) separating the circuit package from the cavity plate.